

Monthly Progress Report
Corrective Measures Study (CMS) for Potential Release Site (PRS) 16-021(c)
July 2000

This report summarizes Los Alamos National Laboratory (LANL) activities that were completed during July of fiscal year (FY) 2000 on the CMS for PRS 16-021(c), the 260 outfall. Both the activities described in the CMS plan ([LA-UR-98-3918]), which was submitted to the New Mexico Environment Department-Hazardous Waste Bureau [NMED-HWB] on 9/30/98, and approved by NMED-HWB on 9/8/99), and other related activities are described herein.

Description of Activities and Contacts

High Performing Team (HPT) Cerro Grande Fire Recovery Activities – The 260 HPT met on July 10, 2000. The HPT discussed impacts of the Cerro Grande fire and subsequent flooding on the TA-16-260 outfall CMS activities that were identified during June. These are in addition to impacts that were identified during the June 5, 2000 HPT meeting.

LANL personnel noted that the automated water samplers in Martin spring were damaged. NMED water samplers were borrowed to replace the damaged instruments. Several locations that had been damaged by the Cerro Grande fire or were dry were bypassed due to field conditions in the June quarterly sampling; these included headwaters of Cañon de Valle, Fishladder Seep, Water Canyon at ESH-18 station, the confluence of Cañon de Valle and Water Canyon, the Fishladder Canyon cliff, and the two up-drainage monitoring wells in Martin Springs Canyon. LANL noted that the 10-day notification for the quarterly sampling had not been completed because LANL sampled early to establish a contaminant baseline prior to the monsoonal rains. LANL personnel added that the impacts of the recent flooding in Canon de Valle had been minimal. Little overbank sediment deposition of channel cutting had occurred. Members of the ecological risk team had examined Cañon de Valle and estimate that it would recover ecologically in a few months.

The 260 IM has resumed following the fire-suppression activities at MDA-R and the BMP reinstallations. HPT personnel discussed the letter to allow soil blending at TA-16-260 outfall. LANL personnel stated that the robotic excavator would become available the weekend of July 14. NMED personnel believed that the blending letter would be complete by then. The procedure for initiation of Temporary Authorization was briefly discussed.

LANL personnel noted that the HE composting sample had been recharacterized, following burning in the Cerro Grande fire, and that the composting study was ready to begin again. The HPT briefly discussed the revised Stormwater Management design that had been provided by LANL. A revised 401/404 application will be submitted.

The HPT reviewed the Schlumberger geophysical log that had been completed in CdV-R-15-3. The relation between feature in the log and the screen positions was described by LANL.

The next meeting is scheduled for August 14, 2000.

RCRA Facility Investigation (RFI) Report and CMS Plan– No new activities occurred during July 2000.

Best Management Practices (BMPs)– BMPs were inspected daily during on-going fieldwork. No repairs were required this month.

CMS Hydrogeologic Investigations–CMS hydrogeologic investigations include ongoing Phase II RFI sampling as well as continuing investigations outlined in the CMS plan.

The ongoing Phase II RFI sampling included sampling Burning Ground Spring every other day for bromide, other anions, and stable isotopes. Sanitary Waste Consolidation System (SWSC) and Martin springs were not sampled using autosamplers, because of damage to those autosamplers in the Cerro Grande fire. Autosamplers (including samplers borrowed from NMED) were reinstalled in July, and those samplers were made operational. Weekly hand-collected samples were taken to replace the autosamples. The analyses from the July sampling are in process. No new bromide breakthrough has been observed in samples to date. The flow in SWSC spring is at a very low level.

The wells, both alluvial and deep, were checked weekly for both presence and level of water. Four of the five alluvial wells contained water; the exception is still alluvial well 2655, which is located in the steam plant drainage. None of the intermediate-depth boreholes contained water. Water levels in all the Canon de Valle alluvial wells dropped by up to 1 ft during early July; however, due to precipitation in late July, their levels have recovered almost to their June levels. An increase in total dissolved solids in the alluvial wells since the Cerro Grande fire has also been noted.

In July, samples from three precipitation events were collected.

An additional round of samples of three springs and five alluvial wells was completed. These samples were collected at the request of the fire-recovery canyons team.

It was determined that the screen locations at CdV-R-15-3 were offset by ~ 10 ft from their proposed positions. This was due to an error during well completion. Well development was accomplished in the regional aquifer. The following table summarizes the status of the screens and development:

Screen #	Proposed screen location (ft)	Actual screen location (ft)	Nephelometric Turbidity Units following development	Usability of screen
1	607.17-616.25	616.25-625.33	NA	Not impacted by bentonite – Fully usable
2	790.28-799.47	799.36-808.55	NA	~ 5 ft of usable screen
3	954.24-972.65	963.32-981.73	NA	~ 10 ft of usable screen
4	1224.51-1270.60	1233.59-1288.94	1.4 N.T.U.	Not impacted by bentonite. Fully usable.
5	1337.85-1347.07	1346.93-1356.15	1.5 N.T.U.	~ 2 ft of usable screen.
6	1627.30-1636.51	1636.38-1645.59	1.03 to 2.85 N.T.U.	Not impacted by bentonite. Fully usable.

Ecological Risk Pilot–

No work on the ecological risk pilot occurred during July due to the damage in Canon de Valle caused by the Cerro Grande fire.

CMS Bench and Pilot Studies–Bench and pilot studies continued in collaboration with the Innovative Treatment Remediation Demonstration (ITRD) Program. The ITRD HE program is focused on two DOE sites: LANL and Pantex. Six studies are now ongoing or have been completed under the auspices of ITRD, all of which may benefit the PRS 16-021(c) CMS:

1. A study of the passive barrier technology of Stormwater Management, Inc., which is potentially useful for removing HE and barium from waters.
2. A study of chemical treatment of HE-contaminated soil using zero-valent iron (ZVI). This study has been completed.
3. A study of in situ anaerobic bioremediation of HE using gas-phase carbon additions.
4. A study of ex situ anaerobic bioremediation of Pantex soils using the W. R. Grace process, which combines anaerobic bioremediation with a ZVI treatment.
5. A study of HE composting. Amendments appropriate to northern New Mexico were tested on clean soils. Contaminated soil tests will also be initiated.
6. A study of immobilization of barium-contaminated sediments from Cañon de Valle.

The soil recollected to support the composting study was analyzed. The soil contains less than 5% HE and did not fail the TCLP test for barium. An HE-composting pilot study using this soil was initiated. Temperatures of the compost mix failed to rise above 100° F, suggesting that inefficient composting was occurring.

A pilot study of the W.R. Grace process on these same soils was also begun.

Soil samples for a barium immobilization study were collected and analyzed by TCLP to determine whether they would be classed as RCRA hazardous waste upon generation. These are from locations in Canon de Valle that had previously been analyzed for total metals and high explosives. Sulfate stabilization tests will be completed on soils that would not be classed as hazardous waste.

Interim Measure (IM) –

Soil blending of the pond area was initiated in July following receipt of the approval to blend soil from NMED on July 12, 2000. Following mobilization of the BEAR robotic excavator to the IM site, soil blending was completed on July 20. The dimensions of greater-than-five-percent soil blended was approximately 18 x 48 x 5.5 ft. All blended material came from within the pond area, or was high-HE pedestals that had been segregated from further down the drainage. Blended soil was excavated and stored in roll-offs within the AOC boundary. Field HPLC analyses indicate that the concentration of HE in the blended soil is less than 5%.

The robotic excavator was also used to excavate the bromide characterization trench. Screening samples were used to select laboratory samples for offsite bromide analysis.

In the pond area, the robotic excavator was able to excavate through ~ 4 ft of orange tuff. At a depth of ~ 9.5 ft the robotic excavator was stymied by densely-welded purple tuff. No blending was necessary at these depths. It was determined that continuation of the excavation to the desired depth of 17 to 20 ft. to the surge bed would not be mechanically feasible with the robotic excavator.

Excavation of the lower drainage continued, slowly, throughout the month. It is difficult to excavate soil from the area, deposit it in drums, and manually haul the drums out of the drainage.

The following is a summary of soil volumes excavated to date: estimate total volume of sediment blended and excavated: ~ 400 yd³; volume of soil excavated and added to non-blended stockpile: ~ 650 yd³; volume of contaminated soil excavated from lower drainage and added to the stockpile: ~ 20 yd³.

During robotic excavation beneath the concrete trough a thin layer (approximately 6 x 18 in.) of creamy-tan material was exposed. The material fills a wooden form that apparently was used to pour the cement for the troughs. The material appears to be predominantly

HE. LANL is considering extending the IM to include some of the troughs. This issue will be discussed during the August HPT meeting.

Public and Stakeholder Involvement– No activities during July 2000.

Percentage of CMS Completed

LANL estimates 58% of the CMS has been completed to date. Note that this percentage does not reflect the deep wells that will be drilled per the CMS plan addendum.

Problems Encountered/Actions to Rectify Problems

General Problem (1) The Cerro Grande fire has severely impacted the 260 RFI/CMS activities. These problems have been discussed in detail in previous monthly reports.

Action to Rectify General Problem (1): LANL will work closely with NMED through the auspices of the HPT to cope with the effects of the Cerro Grande fire.

CMS Hydrogeologic Investigations

Problem (1) The lack of a completed well at R-25 remains a concern to the TA-16-260 team.

Action to Rectify Problem (1): The screens have been installed and the well has been purged. The well is now being readied for Westbay installation.

Problem (2) The fifth screen at CdV-R-15-3 probably will not provide useful groundwater monitoring data (see above).

Actions to Rectify Problem (2): Hydrologic testing will be performed on this screen to determine whether useful data can be obtained.

CMS Bench and Pilot Studies

Problem (1) The HE-bearing composting test is not generating thermophilic conditions as anticipated.

Action(s) to Rectify Problem (1). Modifications to the composting pilot will be undertaken. These include reducing moisture content, analyzing for C/N, and insulating to protect against diurnal fluctuations. DOD experts on composting will be consulted.

IM

Problem(1) The presence of high-level HE beneath the trough is problematic.

Problem (2) The lack of success of the HE-bearing composting test will complicate waste disposal for the IM.

Action(s) to Rectify Problem (1) LANL will discuss including portions of the troughs in the IM with the HPT and determine a path forward.

Action(s) to Rectify Problem (2) LANL will continue to attempt to refine the composting tests. Backup (more expensive) waste disposal options will be investigated.

Key Personnel Issues

None.

Projected Work for August 2000

RFI Report and CMS Plan

- No work is scheduled for this month.

BMPs

- Inspection of existing BMPs following significant precipitation events will continue.

CMS Hydrogeologic Investigations

- Troubleshooting of new autosamplers (including samplers borrowed from NMED)
- Continued bromide sampling of springs (pending autosampler operations)
- Weekly checking for levels and presence of water in alluvial and deep wells.
- Sampling of flow-integrated autosamplers (pending autosampler operations).
- Continued precipitation monitoring and sampling for stable isotopes.
- Data analysis
- Hydrologic testing at CdV-R-15-3.
- Westbay installation at CdV-R-15-3.

Ecological Risk Pilot

- The ecorisk team will develop a study plan for biota sampling in Canon de Valle.

CMS Bench and Pilot Studies

- Troubleshooting of composting tests on HE-bearing materials.
- Evaluation and initiation of study designs for stabilization and phytoremediation.

IM

- Complete removals and staging of low-level HE soils from lower drainage. Begin removals of troughs (pending HPT involvement).

Public and Stakeholder Involvement

No activities planned.